

FOREST MANAGEMENT UPDATE

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COUNSELING CLIENTS CONSIDERING HARVESTING IMMATURE TIMBER CROP TREES

by
Arlyn W. Perkey

Consider this scenario. . . .

Five years ago you thinned a nice 20-acre stand of red oak and yellow poplar for a client. At that time you did not apply Crop Tree Management principles, but you did save the potentially valuable red oak crop trees between 9 and 20 inches DBH and removed the less desirable stems. Your purpose was to accelerate the growth of the residual crop trees resulting in a high value resource that would produce financial benefits in 10-20 years. Your client has now been approached by a timber purchaser and offered \$3,000 for all the red oak over 12" DBH.

Is this starting to sound familiar? If so, please read on. . . .



Photo 1 - Arlyn Perkey with valuable red oak timber crop tree.

Your client is not wealthy, but he is not in desperate need of immediate cash either. He just doesn't know whether he should accept this attractive offer now, or give the trees more time to grow. He is 48 years old, has a high school education, and has spent the last 10 years of his life as the owner/manager of a hardware store in a small town. He has some wildlife and aesthetic objectives in mind for his woodlot, too, but they are not as important at this time as the timber production. He wants your financial advice on what he should do with these crop trees.

How do you advise this landowner regarding the potential of the red oak he is thinking about selling?

FOR
SERVICE
FORESTERS
&
CONSULTANTS



Consider doing this. . . .

Use a series of one-fifth acre plots to estimate the number of potentially valuable red oak crop trees per acre. Determine their DBH, potential sawlog height, and free-to-grow status. With that, you can estimate their volume and value now, and what it is likely to be 10 years from now if they are permitted to grow. You can calculate what the rate of return is expected to be for each tree, and predict how much income they should produce during that 10-year period.

For your application, you would have to estimate the individual tree diameter growth rate for the period. This is based on the site, freedom for crown expansion, and current crown size relative to DBH. A good way to get a feel for that in your local area is to observe some trees being cut and look at their recent growth rates. Measure the width of the last 5 annual rings and multiply by 4 to estimate the 10-year growth rates.

What kind of equipment and skills are needed to do this crop tree investment analysis?

Equipment:

- * Diameter tape
- * Distance tape at least 53 feet long, or
an angle gauge and rod with 19.15"
target on it (for establishing
one-fifth acre plots)
- * Crop tree investment analysis tally sheets
- * Pocket calculator with Business Analyst features
(must calculate interest rate when you input
present value, future value, and time period)
or volume table for individual trees (see
article in this issue entitled "Estimating
Individual Tree Volumes with a Hand-Held Calculator")

Skills and Knowledge:

- * Ability to estimate existing and potential
heights for merchantable products
- * Ability to estimate individual crop tree
growth rates (there will be more on
this in the next issue of the Update)
- * Up-to-date information on stumpage values
for crop trees of different sizes

Following is a listing of 15 timber crop trees in West Virginia. The expected diameter of the trees is based on 5 years of measured growth and 5 years of projected growth at a similar rate. Values are based on a stumpage rate of \$75/MBF for trees 11.0 - 13.9" DBH, \$150/MBF for trees 14.0 - 16.9" DBH, \$225/MBF for trees 17.0 - 19.9" DBH, and \$275/MBF for trees 20"+ DBH. Cordwood is valued at \$5.00/cd. The free-to-grow rating is determined by evaluating the freedom of the crown to expand on 0, 1, 2, 3, or 4 sides.

INCOME & RATES OF RETURN FOR 15 WV TIMBER CROP TREES

TREE NO.	DBH	FREE TO GROW	10-YEAR GROWTH	1982 VALUE	1992 VALUE	CROP TREE INCOME	RATE OF RETURN
1	20.9	3	5.0	\$88.37	\$132.30	\$43.93	4.1%
2	14.3	2	2.4	16.87	30.53	13.66	6.1
3	17.1	2	4.0	37.35	70.37	33.02	6.5
4	17.8	2	4.2	63.03	118.58	55.55	6.5
5	15.3	2	2.0	25.92	48.94	23.02	6.6
6	15.2	2	3.4	20.05	43.64	23.59	8.1
7	11.1	1	2.0	2.31	5.10	2.79	8.2
8	11.2	2	2.6	2.34	5.61	3.27	9.1
9	14.2	2	3.4	16.65	50.55	33.90	11.7
10	14.0	2	4.6	16.21	56.10	39.89	13.2
11	13.7	0	2.2	7.78	27.85	20.06	13.6
12	12.0	0	2.2	4.36	16.65	12.29	14.3
13	12.2	4	4.2	4.49	29.51	25.02	20.7
14	11.1	3	3.0	2.31	16.43	14.11	21.7
15	13.2	3	4.0	5.17	48.40	43.23	25.1
AVG.	14.2	2	3.3	20.88	46.70	25.82	11.7

The incomes and rates of return listed in the chart do not reflect any allowance for inflation, or any real increase or decrease in stumpage value that may occur. They also do not reflect any cost of owning the land, including purchase price, taxes, and administrative expenses.



Notice that Tree Number 1 is earning good income, but its rate of return is relatively low even though it has a high free-to-grow rating and a rapid rate of physical growth. This is because the tree is already large, and it has a high initial value.

Had a "crown touching release", as shown in Photo 2, been applied to the highest value timber crop trees in this stand, more trees would have free-to-grow ratings of 3 or 4 with corresponding growth rates, crop tree incomes, and rates of return. Crop tree management can facilitate development of more trees with this high productive capacity.

Photo 2 - Crown touching release applied to high value timber crop trees.

It might be difficult for many landowners to understand this investment analysis procedure as it applies to the trees in their woodlot. For this reason, it may be helpful to describe each crop tree as a savings account containing a certain number of dollars earning a given interest rate. If most of the crop trees are earning enough money to justify their existence to the landowner, they should be retained. If they are not, and if there is no other important reason to keep them, maybe they should be sold.



Photo 3 - Tree #15 (13.2" red oak, free to grow on 3 sides).

to generate significant income during the 10-year period. Notice their crowns are free-to-grow on 3 or 4 sides, and they have rapid growth rates. There is seldom very many of these trees (accounts) in an unmanaged stand.

The most difficult part of this whole procedure, and the greatest potential for error is estimating crop tree growth. Ideally, it would be nice to have an increment core showing the last five years of growth for every sampled crop tree so the length of this 5-year radial growth could be multiplied by 4 to estimate the overall growth per decade. Since this would be time-consuming, and potentially damaging to the crop trees, it is desirable to limit the boring of trees to a few in each diameter and free-to-grow rating class. These increment cores, along with observations from stumps and logs of harvested stands in the local area, are a source of growth prediction information for individual trees.

If the landowner can relate to the average income and rate of return for the crop trees on his property, you can calculate that for him. Assume these 15 trees were on 10 one-fifth acre plots on a 20-acre woodlot (a total of 150 trees 12" DBH+). Based on this sample, the 150 crop trees would have an average income of \$25.82 per tree, and an average rate of return of 11.7%. Red oak crop trees would have a total (+ \$600 at 1SD) income of \$3,873, or \$19.37 per acre/year. Does that return, along with the other benefits they provide, make them worth keeping?

Some accounts (trees) have more money in them than others, and some are earning better interest rates. The best ones have the combination of containing a large sum of money and earning a very good rate of return. For example, Trees #13 and #15 are earning good rates of return, and they are worth enough initially

Following is an example of how the rate of return and crop tree income is calculated for an individual tree. Using Tree Number 11 as an example, work through the steps listed to see for yourself how the process works.

Step 1 - Calculate the present volume of the tree, using the following formulae:

Trees 11.0-14.9" DBH

$$V = .16D^2H + D$$

Trees 15.0-19.9" DBH

$$V = .16D^2H + 1.5D$$

Trees 20.0"+ DBH

$$V = .16D^2H + 2D$$

Where V = volume in board feet (Int. 1/4"), D = DBH in inches, and
H = height in 8-foot bolts.

Note: For more details on using these formulae, see article entitled "Estimating Individual Tree Volumes with a Hand-Held Calculator" in this issue of Forest Management Update.

Tree Number 11 is presently 13.7 inches DBH, and its sawlog height is three 8-foot bolts. Consequently, its volume is:

$$V = (.16 \times 13.7 \times 13.7 \times 3) + 14 = 104 \text{ BF}$$

Step 2 - Calculate the present value of the tree by multiplying the volume by the stumpage value of \$0.075/BF (present value = $.075 \times 104 = \$7.78$). Enter this in the present value register of the calculator.

Step 3 - Calculate the future volume of the tree, using its estimated diameter and height growth. In this case, future diameter would be 15.9" (DBH + 10-Year Growth) and future height would be four 8-foot bolts (based on the assumption that it would produce another bolt during the 10-year period). Its future volume would be:

$$V = (.16 \times 15.9 \times 15.9 \times 4) + (1.5 \times 16) = 186 \text{ BF}$$

Step 4 - Calculate the future value of the tree by multiplying its volume by its stumpage value of \$0.15/BF (future value = $.15 \times 186 = \$27.87$). The increase in unit stumpage value is due to the increased board foot value of larger trees. Enter this in the future value register of the calculator.

Step 5 - Enter 10 (for 10 years) into the time period register, and have the calculator compute the interest rate. For this example, that is 13.6%. To obtain the crop tree income, subtract the present value from the future value -- in this case it is \$20.06.

If you want to estimate the financial benefit of fully releasing the crop trees, repeat the procedure using the accelerated growth rate. For the tree used in the example, it would not be unreasonable to increase its growth from 2.2 to 3.5 inches/decade. If there is no change in sawlog height, its rate of return would increase to 20.0%, and its crop tree income to \$40.60. This type of financial analysis can be done in the field with the client so he/she can relate to the earning potential of individual crop trees.

If, after providing your client with the best investment analysis you can, he decides to liquidate his resource anyway, try not to be offended or upset -- these things can and do happen. Advise the landowner to obtain a reliable estimate of the volume and value of timber he has to sell, and to seek competitive bids so he will get a fair price. It does little good to manage a high value product, and then lose the revenue due to failure to wisely market the crop.

A VERY SPECIAL THANK YOU

The printing of this issue of the Update marks the end of an era. This is the last time our friend, Al Coy, will add his special "one-of-a-kind" touches to this product. Al will be retiring soon and the print shop which he has operated so well for so long, will be closed. Due to the move of our headquarters from Broomall to new facilities in Radnor, PA, printing of informational material will start being done by outside sources once the move takes place.

We want to take this opportunity to say a very special "Thank You" to Al for all the advice and assistance he has given us over the years and to wish him well in his retirement. We're sure going to miss you, Al.

--- Arlyn and Brenda

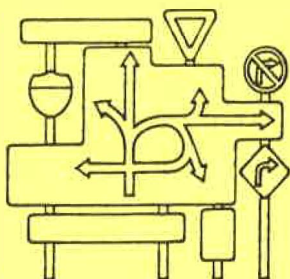
WHERE DO WE GO FROM HERE??
RESULTS OF A "NEEDS" SURVEY OF NORTHEASTERN AREA CLIENTS
by
Brenda L. Wilkins

As you may recall, in preparation for the May 2-4, 1989, 5-Year Plan Meeting of Northeastern Area Forest Management Specialists, a client survey was conducted via the March mailing of the Forest Management Update. The response form contained two questions:

- 1) What subject areas would you like us to concentrate our efforts and resources on during the next 5 years?; and
- 2) How can we best communicate with you; and, in turn, help you to communicate with your clients?

On the front side of the response form, we listed fourteen "subject areas" which could be checked and ranked in order of priority from 1 to 7, with 1 being highest priority. We also provided a space where you could write in your own suggestions. On the back of the response form, we listed eleven "ways to communicate", again requesting you to choose up to seven and rank in order of priority. Space was also given here for you to write in suggestions. A third area of the form labeled "Additional Comments" offered an opportunity for you to share any other thoughts, concerns, or comments you might have.

WHERE DO WE GO FROM HERE??



RESULTS OF A "NEEDS" SURVEY
OF
NORTHEASTERN AREA CLIENTS

BY:
BRENDA L. WILKINS
NA-S&PF, MORGANTOWN, WV

For the purpose of the meeting, a written report was prepared based upon the responses received from our clients within the Northeastern Area. Of the approximately 1000 NA clients on the Forest Management Update mailing list, 300 responded in time to be included in this report.

Valuable insight was also gained from the responses we got from outside NA. Although this input is not reflected in the computations within the report, the information will be helpful to us in other ways.

The information contained on the following pages summarizes the input received. Copies of the entire report are available upon request from this office. It contains detailed lists of all comments received by subject area and state, along with charts that offer combined ratings of all subject areas (by state) at a glance.

SURVEY HIGHLIGHTS

Subject Areas:

- * Regeneration, both natural and artificial (hardwoods), is of primary importance.
- * Supporting forest management incentives through development of innovative cost-share programs is also a high priority.
- * Financial analysis of management opportunities on the PNIF ranked second in order of priority among over half of the survey respondents.
- * Integrated forest management, or multiple-use management (timber, wildlife, aesthetics, etc.), is popular among PNIF owners as indicated by about 50% of the respondents.
- * Licensing or registration of foresters seems to be a regional issue. Both New York and Pennsylvania are very strongly in favor of legislation requiring foresters to be licensed.
- * Development of user friendly computer programs remains popular among our clients; however, it ranked only about midway on the priority scale.
- * Developing and publicizing "model ordinances" for local government entities considering forest regulation seems to be a subject area most popular with Vermont. Overall, however, it did not rank as very high priority.
- * Providing timber tax information to foresters and landowners is a subject area popular among over half of the respondents; however, it is not a high priority.
- * Developing inventory, analysis, and marking techniques that facilitate use of crop tree management on the PNIF captured the interest of over one-third of the respondents and ranked fairly well in the areas where this new concept has been introduced.
- * Herbicide use on the PNIF does not seem to be of major interest at this time.
- * Reviewing the effectiveness of federal cost-share programs appears to be a fairly low priority subject area; only New Hampshire and New Jersey indicated interest slightly above midway in priority.
- * Artificial regeneration of softwoods ranked last among the listed subject areas offered for consideration of our clients. Only 37 respondents indicated interest.

Other Subject Areas:

In the space provided on the response form for clients to suggest their own ideas of specific subject areas NA should be working on in the next five years, many people offered the same comments. Following, listed in order of priority, are the subject areas suggested by our clients, and the number in parentheses indicates how many of them made the same comment:

1. Make information and education the highest priority. (22)
2. Encourage legislation that will promote good forest management practices: (9)
 - prohibit highgrading
 - tax reform/incentives
 - licensing of foresters
3. Identify or create markets for low quality wood products. (8)
4. Multiple-use management (timber, wildlife, & aesthetics). (7)
5. Encourage States to refer more work to consultants. (6)
6. Work to promote better relationship between private, state, and federal foresters. (2)
7. Support staff increase in State CFM field offices. (2)

Ways to Communicate:

- * Sponsoring & conducting small workshops for foresters is the most effective means of communicating with our clients, according to more than two-thirds of the survey respondents.
- * Writing articles for Forest Management Update is also an effective mode of communication as indicated by nearly two-thirds of our clients responding. Since the Update was the vehicle by which the survey was conducted, some bias is expected; however, many respondents made personal comments to reinforce their approval of this means of communication.
- * Preparation & distribution of forest management videos for landowners received strong, widespread support. Note: Videos preferred over slide-tape programs; however, slide-tapes also ranked fairly high.
- * Publication of articles in landowner magazines appears to be a popular method of communicating with owners of the PNIF.

- * Establishment of demonstration areas in accessible places received the support of over half of the respondents. It rated especially high in West Virginia where the Crop Tree Release Demonstration Area has been established at Coopers Rock State Forest near Morgantown, WV.
- * Preparation & distribution of forest management videos for foresters ranked fairly high among nearly half of the respondents. Slide-tape programs are not as desirable as videos.
- * Writing articles for the Northern Journal of Applied Forestry did not generate high interest among respondents.
- * Site visits with individual foresters seems to be something that varies regionally; however, it is generally not viewed as being very effective.
- * Sponsoring symposiums and presenting papers on forest management issues received the least interest of the listed "ways to communicate". Many respondents wrote that they cannot attend such meetings due to time and dollar limitations.

Other Ways to Communicate:

A summary of the "other" block for the "ways to communicate" portion of the response form revealed several respondents with the same suggestions. These are listed in order of priority with the number in parentheses reflecting how many people commented:

1. Write articles for newspapers, magazines, and TV to help educate the general public to the benefits of forest management. (11)
2. Prepare videos and colorful, plain English brochures to serve as communication tools. (9)
3. Conduct training sessions to transfer new technology to on-the-ground foresters and to strengthen the link with PNIF owners. (8)
4. Prepare newsletters/technical bulletins to keep service foresters and consultants informed and up-to-date. (7)
5. Prepare a comprehensive reference manual or "Guidebook" for foresters to use in working with PNIF owners. (3)

Additional Comments:

A summary of duplicate responses from the "Additional Comments" portion of the response form follows:

1. Continue publishing Forest Management Update. (22)
2. Concentrate on I&E -- educate the public (brochures, videos, mass media). (19)
3. Promote legislation to encourage good forest management practices. (6)
4. Conduct training sessions for on-the-ground foresters. (6)
5. Encourage multiple-use management. (2)
6. Support increased budgets for forest management activities within individual states. (2)
7. Encourage better cooperation between state service foresters and consultants. (2)

Thanks, again, to all of you who provided us with this information. We sincerely hope that the insight we gained will enable us to serve you better in the future.

Enclosed with this issue of the Forest Management Update is a copy of the Forest Management 5-year plan. This is the product of the May, 1989, meeting into which you provided input.

ESTIMATING INDIVIDUAL TREE VOLUMES WITH A HAND-HELD CALCULATOR
by
Arlyn W. Perkey

Inexpensive hand-held pocket calculators are convenient to carry, and they may be used to quickly and easily estimate individual tree volumes. This is especially true, if the user is willing to remember a few numbers or carry a few notes.



Photo 4 - Hand-held calculator for investment analysis in the woods.

Why estimate volume on a calculator rather than look it up in a volume table? Because it makes doing investment analysis on individual crop trees more convenient. When doing this, it is appropriate to base volume estimates on individual tree DBH measured to the nearest tenth inch. It is much easier to carry a hand-held calculator around with you than it is to tote volume tables containing figures broken down that far.

To estimate tree volumes using the International 1/4" Rule, the following formulae work quite well:

<u>For</u>	<u>For</u>	<u>For</u>
Trees 11.0-14.9" DBH	Trees 15.0-19.9" DBH	Trees 20.0-24.9" DBH
$V = .16D^2H + D$	$V = .16D^2H + 1.5D$	$V = .16D^2H + 2D$

Where V = volume in board feet, D = DBH in inches, and
H = height in 8-foot bolts

Notice that the first term in the three equations is the same. Consequently, for any tree 12-24 inches DBH, the first step in estimating the volume will be to square its diameter in inches (measured to nearest tenth inch), and multiply the result by the product of the constant .16 and the number of 8-foot bolts in the tree. The equations were developed using 8-foot bolts rather than logs to make it easier for you to multiply the height by the constant .16 in your head if you so desire. It is easier to multiply .16 by a whole number (1, 2, or 3 bolts) than it is by half numbers (.5, 1.5, 2.5 logs).

Note: A good way to remember the constant .16, is to recall that just as there are 16 feet in a log, there are 16 hundredths in this constant.

The second term of the equation is simply the diameter in inches for trees 11.0-14.9" DBH, 1.5 times the diameter for trees 15.0-19.9" DBH, and 2 times the diameter for trees 20.0-24.9" DBH. For trees in the intermediate size class, 15.0-19.9", it is close enough to round the tree DBH to the nearest inch or two-inch class before multiplying it by 1.5. That will make it easier to do in your head, if you like.

Let's do a few examples to see how easy it is:

Example 1: Crop tree is 12.7" DBH, height is 2 bolts

$V = .16D^2H + D$
in your head multiply 2 x .16 to get .32
with your calculator, square 12.7 to get 161.29
" " " , multiply 161.29 x .32 to get 51.6
" " " , add to 51.6 the diameter, 12.7, to get
64 bd. ft., your volume estimate

Example 2: Crop tree is 16.3" DBH, height is 3 bolts

$V = .16D^2H + 1.5D$
in your head multiply 3 x .16 to get .48
with your calculator, square 16.3 to get 265.69
" " " , multiply 265.69 x .48 to get 127.5
in your head multiply 1.5 x 16 to get 24
with your calculator add 24 to 127.5 to get 152 bd. ft., your
volume estimate

How do these calculator estimates compare with the International 1/4" volume table? Here are some sample comparisons:

<u>Tree DBH</u>	<u>No. 8' bolts</u>	<u>Calculator Volume</u>	<u>Volume Table</u>
12.0	2	58	60
14.0	3	108	110
16.0	3	147	150
18.0	4	234	240
20.0	4	296	300
22.0	4	354	360
24.0	5	509	510

Need to convert these International 1/4" volumes to Doyle? Adjust the calculator estimate of International 1/4" volume by multiplying it by the respective factors for trees in the following size classes:

<u>Crop Tree Size Class</u> <u>DBH (inches)</u>	<u>Factor</u>
12	.50
14-18	.65
20	.75
22	.80
24-26	.85
28	.90

Warning: Using the Doyle Tree Scale to calculate volumes to use in investment analysis can leave false impressions. Since this Rule grossly underestimates the volume of small logs, rate of return and crop tree income estimates based on these volumes will exaggerate the benefit of retaining the crop trees longer so they will reach a larger diameter.

MARKETING ALTERNATIVES FOR WHITE PINE PLANTATIONS IN OHIO

by
Arlyn W. Perkey

Landowners with white pine plantations within the market radius of Mead Corporation's Paper Mill in Chillicothe, Ohio, now have marketing alternatives available to them. Since Mead has made the decision to utilize white pine



Photo 5 - Brenda Wilkins in pruned white pine plantation.

fiber in their paper making process, landowners with timber management objectives need to weigh the benefits of growing white pine for fiber as opposed to growing it for sawtimber. Ideally, it would probably be financially most advantageous to the landowner if he/she could manage for both products. That is, have sawtimber as the ultimate product objective, with

fiber produced as an intermediate by-product that is harvested periodically to accelerate the growth of sawtimber crop trees. Unfortunately, at this time, commercial thinnings in white pine plantations are not a viable option.

However, even without the commercial thinning option, landowners should decide if they want to manage their stands for fiber on a 30-year rotation, or grow sawtimber on a 45-year rotation. If they decide to manage for sawtimber, is it worth it to invest in precommercial thinning and pruning in these stands? Read on for an analysis of three different alternatives. But first, since any investment analysis is only as good as the assumptions that go into it, following are mine:

ASSUMPTIONS

1. The production of timber as a crop is not the only reason for owning the land. Consequently the purchase price of the land, annual taxes, and administrative expenses of ownership are not considered as costs of growing the timber crop. The cost of establishing the plantation is regarded as a sunken expense, and therefore is not considered a part of the analysis to determine the best management alternative for the stand now.
2. Treatment costs and stumpage prices are held constant, based on 1989 values. Consequently, calculated rates of return are real rates, excluding inflation and any real increase in stumpage value.
3. For Alternative 3, the precommercial thinning and pruning alternative, the assumption is that 100 trees per acre will be released and pruned to a height of 17 feet. Eighty of those 100 trees are assumed to survive and grow to an average diameter of 20 inches at the age of 45 years. The stand was planted on an 8 x 8 foot spacing, it is on site index 80 (base age 35) land, and it is currently 15 years old. For the fiber rotation, it will be grown to 30 years of age. For both sawtimber alternatives, it will be grown to 45 years of age.
4. The thinning and pruning treatment is done under the FIP program, at a 65% cost-share rate. The treatment cost of \$71/acre is the landowner's share of the investment. Stumpage values are \$60/MBF for unpruned sawtimber, and \$120/MBF for the pruned portion of the tree. The stumpage value for chips is \$5.00/ton.

Note: The model, GROWPINE, is used as the source of the volume estimates for the three alternatives considered.

ALTERNATIVE 1 - FIBER OPTION

Initial volume (at age 15) = 37.3 tons/acre
Initial value = \$186.50

Future volume (at age 30) = 111.9 tons/acre
Future value = \$559.50

Rate of Return = 7.6%
Average Annual Income = $(\$559.50 - 186.50) / 15 \text{ years} = \$24.87/\text{year}$

ALTERNATIVE 2 - SAWTIMBER OPTION, NO THINNING OR PRUNING

Initial volume (at age 15) = 37.3 tons
Initial value = \$186.50

Future volume (at age 45) = 31.1 MBF/acre
Future value = \$1866/acre

Rate of Return = 8.0%
Average Annual Income = $(\$1866 - 186.50) / 30 \text{ years} = \$55.98/\text{year}$

ALTERNATIVE 3 - SAWTIMBER OPTION, WITH THINNING & PRUNING

Initial volume (at age 15) = 37.3 tons
Initial timber value = \$186.50
Investment in thinning & pruning = \$71/acre
Initial value + investment = \$257.50

Future volume unpruned timber (at age 45) = 17.5 MBF/acre
Future volume pruned timber (at age 45) = 13.6 MBF/acre
Future value = \$2,682/acre

Rate of Return = 8.1%
Average Annual Income = $(\$2682 - \$186.50 - \$71.00) / 30 \text{ yrs.} = \$80.82/\text{year}$

These numbers indicate the sawtimber options are a more attractive investment, especially if average income is an important criterion. However, there is also greater risk. The market for the higher value product may not be there when the trees are mature, and even if it is, the landowner may need to invest in more marketing assistance to achieve the greater value. Also, since the rotation is longer, there is greater risk of a catastrophe, like a tornado, destroying the investment before harvest. Of course, in addition to those risks, the landowner must be willing to wait the additional 15 years to receive the revenue.

This analysis is a simple one, but it does give some indication of the relative financial benefits each alternative could provide. It is less effective at estimating the actual rates of return and incomes that could be achieved. The reliability of those estimates is very dependent on the validity of the assumptions. In other words, these numbers are no substitute for judgment, they are just another piece of information to help the landowner make the best decision considering his/her individual objectives.



COMMENTS FROM OUR READERS . . .



Franz L. Pogge of Morgantown, WV, offered the following comments in response to last issue's article entitled, "If We All Pull Together, How Happy We'll Be":

I like to stress species diversity in a timber stand that also receives gray and fox squirrel considerations. This way, some nuts and acorns can be produced virtually every year. When red oaks fail, white oaks may have a crop of acorns, or the hickory might. Expanding flower buds in the spring are highly preferred foods, particularly the male flower buds which are high in nutritional value. Tree species diversity in a stand is important since not all of them bloom at the same time. Preferred fall squirrel foods are shagbark hickory, beech, white oak, black before red oak, scarlet oak, butternut, and black walnut. You might keep this in mind when making your thinning. For spring flowers, buds of maples and oaks are preferred, but even more desirable are the expanding male catkins of aspen.



Photo 6 - Active squirrel den in black gum tree.

Dens or den boxes - squirrels much prefer two or even three dens or den boxes in close proximity (Pogge 1981). Squirrels are very clean housekeepers. They use one den or box just for nesting, one for feeding, and still another one for defecating. In the winter they can stay out of the cold windy exposure and conserve energy by sometimes feeding and defecating in the same box. In the summer female squirrels with young like to have two or three dens or den boxes in close proximity. That way the mother can be near her young, but does not have to be constantly with them in the same box. In hot humid summer weather, when dens and nests are overrun by fleas and other insects, a mother will not hesitate to move her young

to a new den or nest. Litter movement is common in squirrels, so additional dens or den boxes will be needed. Depth of den boxes is critical. Raccoons have a long reach. Squirrel den boxes should have a depth of 15 inches below the entrance, or else have a "baffle" -- that is a shelf with one corner cut in the back -- just below the entrance. Best placement of a den box is with an east or northeast exposure (Pogge 1981). There the box can receive the early morning sun, but during the late afternoon, summer heat would be on the shaded side. Keep boxes out of prevailing cold winter winds.

Leaf nests - many young are born and reared in leaf nests, especially fox squirrels. Some squirrels build several leaf nests during a summer and utilize them, most probably, to get away from their stuffy den and maybe high flea population. In our gray squirrel research, the year we provided the squirrels with the most den boxes, they proceeded to build the most leaf nests. Fox squirrels can and readily do overwinter in a leaf nest, particularly when dens are in short supply. Gray squirrels rarely overwinter in a leaf nest. Leaf nests are usually built in tangles of some kind where the nest can be anchored better. More gray and fox squirrel leaf nests were anchored to grapevines than anything else (Sanderson et al 1980). Therefore, if squirrels and other wildlife receive strong consideration in managing your timber stand, you might consider leaving a few of your grapevines.





ANNOUNCEMENTS

In an attempt to ensure that landowners receive a fair price for the timber they sell, a new publication entitled "How to Estimate the Value of Timber in Your Woodlot" is now available. The booklet was written by Dr. Harry V. Wiant, Jr., a professor of forestry at West Virginia University. The publication assists the landowner in all areas of woodlot inventory, from identifying tree species to deciding when to sell the timber. The booklet describes the instruments used to measure standing trees, how log and tree volumes are estimated, and how grade and defect are determined in logs and trees. The landowner is introduced to the basic concepts of surveying property lines, conducting a timber cruise, advertising a timber sale, and writing a sales contract. The booklet contains many useful figures and tables.

This publication is an excellent source of information for anyone considering selling timber. It can serve as a means for gaining important technical knowledge prior to hiring a consultant forester. It is also a valuable tool that may help educate the landowner not to be tempted by a large lump sum offered by a timber buyer.

To obtain a copy of this booklet, contact:

Mildred Spangler
Mailing Services
Communications Building
West Virginia University
Morgantown, WV 26506

Ask for WVU Agricultural and Forestry Experiment Station Circular 148.

For all you folks who answered our Update survey and requested information on regenerating hardwoods, we highly recommend a new publication entitled "Managing Appalachian Oaks: A Literature Review" by Sandra Fosbroke and Kenneth L. Carvell. This summary is a condensation of an oak literature review prepared as a master's degree project at West Virginia University. It explores the management of white oak, northern red oak, and black oak in the Appalachian Plateaus, Ridge and Valley, and Blue Ridge physiographic provinces. Sections of the circular discuss oak regeneration ecology, hardwood regeneration in the Appalachians, evaluation of advance oak regeneration, and oak regeneration methods. Oak planting, prescribed burning and intermediate treatments, such as thinning and fertilization are also discussed. The publication contains an impressive list of references and sources of further information.

Copies may be obtained from the preceeding address, and ask for WVU Agricultural and Forestry Experiment Station Circular 149.



Do you have clients who need help in tax planning in connection with preserving valued family land, including help to pass all or part of the family's land intact to the next generation? Stephen J. Small, a Boston tax lawyer, has written a booklet entitled "Preserving Family Lands: A Landowner's Introduction to Tax Issues and Other Considerations" that may be helpful to your clients. Before you cringe at the thought of reading a lawyer's work, be assured that this book offers simple, easy-to-read, basic literature about protecting the family's land. The

book uses examples to illustrate possible tax and land planning problems and some options available to readers. The book provides the landowner information about land-saving choices, and how to combine saving land with saving taxes.

You may obtain copies of this interesting book by sending \$6.00 per copy to:

Preserving Family Lands
P.O. Box 2242
Boston, MA 02107

For orders of 30 or more copies, the price is \$3.00 per copy.

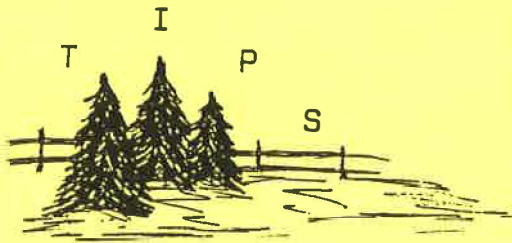
Crop Tree Management Information Packets are now available. They contain much of the research and technical background about the concept, including detailed information regarding "crown touching release".

To obtain a copy of this packet, contact:

U. S. Forest Service - FM&U
180 Canfield Street
P.O. Box 4360
Morgantown, WV 26505



Photo 7 - Measuring crop trees at Coopers
Rock Crop Tree Demonstration Area,
Morgantown, WV



TIP #7:

Looking for a way to stimulate tree planting on Conservation Reserve Program lands? Consider a plan like this Turn-Key project being used in Iowa

The Geode RC&D Turn-Key Investment Program

The Turn-Key tree planting investment program is an opportunity for improving the profitability of managing marginally productive and highly erodible soil resources in southeast Iowa. The program offers custom services in establishing hardwood plantations that are a minimum of 10 acres in size. Wherever possible, land that is suited to black walnut production is planted with that species.

Landowners contract with Geode RC&D to establish a tree plantation for a minimum of 5 years. The contract provides for 3-5 years of custom services, depending on the landowner's wishes for initial level of involvement. Geode, in turn, contracts with vendors to establish the seeding, apply herbicides, plant trees, and mow the plantation. Landowners can finance their participation in the Turn-Key program through the ASCS Conservation Reserve Program (CRP), if they are eligible, or provide their own funding.

The Turn-Key program has been very successful in Iowa. A fulltime forester has been hired by Geode RC&D. The program currently encompasses a four-county area with plantings that range from 10 acres in size to 121 acres per farm. Plantings consist mostly of walnut, red oak, and white oak. As the program continues to expand, funding assistance to landowners wishing to take advantage of it, seems to be increasing. Currently, ASCS will cost-share 50% up to \$420 per acre for eligible landowners. Beginning in January, 1990, an additional 25% may be funded through local Soil Conservation Districts, making it possible for landowners to receive up to a total of 75% funding for land under contract to the Turn-Key program.

For further information on Iowa's Turn Key Forestry Investment Program, contact:

Ron Snyder, Coordinator
Geode Wonderland RC&D
3002A Winegard Drive
Burlington, IA 52601
Phone: (319) 752-6395

SHARING INFORMATION



We invite participation in the development of future issues of FOREST MANAGEMENT UPDATE. The intent of this periodical is to provide a means of technical communication for professional foresters managing the private non-industrial forests in the Northeastern Area. The majority of articles printed in the Update address technical forestry subjects of interest to readers in a reasonably broad geographic area. If any of our subscribers would like to submit articles for publication, please feel free to contact me at the address and phone number listed below.

FOREST MANAGEMENT UPDATE

<< A TECHNOLOGY TRANSFER PERIODICAL >>

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